

Serological evidence of *Coxiella burnetii* infection in cattle and farm workers: is Q fever an underreported zoonotic disease in Ecuador?

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Background: Q fever is an underreported zoonotic disease of cattle and men in most countries of the world. Very little information about the prevalence of *Coxiella burnetii* infection in animals and humans comes from South and Central America and systematic studies are lacking.

Methods: A seroprevalence survey for Q fever amongst cattle, farm workers and students was conducted in Ecuador using a commercial ELISA kit.

Results: Survey results showed an unexpectedly high prevalence of *Coxiella burnetii* antibodies in dairy cattle (43%) and in farm workers (34%). In addition, a clinical case in a human of acute Q fever in the convalescent stage was detected.

Conclusion: We conclude that the disease is endemic in Ecuador but is overlooked by medical and laboratory personnel. Q fever should be considered a public health issue in Ecuador and further research into the clinical relevance of this infection is recommended.

Keywords: Q fever, *Coxiella burnetii*, Ecuador, phase I antibodies, phase II antibodies

Introduction

Q fever caused by *Coxiella burnetii* is a zoonotic worldwide-distributed infectious disease. Cattle, sheep, and goats are the main reservoirs for the bacterium. Transmission of *C. burnetii* from animal to animal, or from animal to human, most frequently occurs via inhalation of dust or droplets that contain the microorganisms.¹ The importance of ticks in transmission remains controversial, even though many studies have shown that ticks species can carry *C. burnetii*.^{2,3} No human to human transmission of *C. burnetii* has been reported.⁴

The World Organization for Animal Health (OIE) lists Q fever as notifiable animal disease and the member countries of this organization are encouraged to report the incidence of the disease in livestock.⁵ In cattle, *C. burnetii* infection is generally asymptomatic but the infection can result in late stage abortion, stillbirths or delivery of weak offspring.⁶ Nevertheless, Q fever is not considered to cause significant economic losses and consequently very little effort are made to control this infection.

C. burnetii infection in cattle has been described for most countries, with New Zealand remaining an exception and the prevalence is highly variable from one country to another. For example, a herd and individual prevalence for *C. burnetii* antibody of 41% and 13%, respectively, has been reported in Iran.⁷ A seroprevalence of less than 13% has been reported for cattle from most countries of Africa, with some exception in Western and Middle Africa where seroprevalence up to 18–55% has been reported.⁸ Several